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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/810,918

03/26/2004

Nan-Hsiung Hung

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47390

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05/31/2007

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SUITE 1750

ATLANTA, GA 30339

EXAMINER

DRODGE, JOSEPH W

ART UNIT

PAPER NUMBER

1723

MAIL DATE

DELIVERY MODE

05/31/2007

PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

**Office Action Summary**

Application No.

10/810,918

Applicant(s)

HUNG ET AL.

Examiner

Joseph W. Drodge

Art Unit

1723

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 06 December 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 21-31 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 21-31 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)   | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                                   | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152)             |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

Claims 21-31 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In each of claims 21, 26 and 27, it is unclear what the "base dosing system" or "membrane stage" is in fluid communication with.

Also, in claims 21 and 27, it is unclear whether the respective claims are reciting that the "base dosing system" itself has the property of not lowering fluid pH, or if applicant intended to recite a negative limitation concerning lack of a pH lowering means between the base dosing system and reverse osmosis system. Claim 28 has the same problem.

Still further in these claims, it is unclear how any reverse osmosis membrane filter of a system would have the property of altering the pH of a fluid treated; did applicant intend to claim a system comprising a reverse osmosis membrane filter and also a second base dosing means or alkali adding means?

In claims 23 and 26, "comprising" should be "comprises".

Claims 21-31 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. The newly added limitations to claims 21 and 27 that can be interpreted to indicate water purification systems lacking pH lowering means, is not fully supported by the Specification and ***constitutes New Matter***.

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Nothing in the Specification precludes there being pH lowering means especially upstream or downstream of the described base dosing systems in series. In fact, paragraph 41 of the instant Specification concerns maintaining of an acid pH of 3 to 4 both upstream and downstream of an ion exchange unit.

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 21,24 and 26-31 are rejected under 35 U.S.C. 102(b) as being anticipated by Mukhopadhyay patent 5,925,255 described hereafter as the M patent or M. For independent apparatus claims 1 and 9, M discloses mixed bed ion exchange units 12,44,46 etc. ***that remove both positive and negative (anionic and cationic) ions from the wastewater***, base dosing systems 13,22,24 in series which each raise water pH which each have the property of not lowering the pH of the water, followed by a “high efficiency” reverse osmosis system 30,34 (see figures 2, 9,11 and other figures). As applied to the claims as amended, ***specifically, base dosing “system” 13 raises the pH of raw water 10 in a first step, then a system that encompasses reverse osmosis unit 30, etc. and also basic material-adding components 22,24 that again or further raises the pH of the water in a second step.***

***If applicant intended to recite a negative limitation excluding structure lowering pH, see figures 2,9 and 11 captions “(“if needed”)” concerning ‘optional’ acid addition means, and see column 22, lines 8-31 that concern an embodiment having plural base adding means, or pH adding means, upstream of a series of reverse osmosis units in which addition of acid at step 14 is only optional. At any rate none of the base adding means have the effect of lowering pH values.***

***If necessary, figures 10 and 11 illustrate the water being treated being continuously recycled between the pH raising steps, RO units and ion exchange units by way of conduits 100 and 104, thus maintaining fluid communication between the different components of the water purification system.***

For claims 26-31, there are a plurality of reverse osmosis unit stages (for instance, see column 22, lines 8-31).

For claims 24 and 25, the ion exchange unit may comprise tank and resin bed within (column 12, lines 54-55). For claim 5, there are two or more filter membrane units in series or stages (column 22, lines 9-14 and 30-37). For claim 9, there may be 4 or more membrane units in series (column 22, lines 8-14). As necessary, claim terminology “in fluid communication” may mean either upstream or downstream.

For method claims 28-31, the pH may be raised in a first step to a neutral pH of about 7 to optimize removal of silica and other ions and later raised in a second step to a highly alkaline pH of at least 8.5 to 10 in membrane purification steps (see especially column 28, lines 13-65 and column 22, lines 14-17 and lines 23-26), also the reverse osmosis units in all embodiments are downstream of the ion exchange units.

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 22 and 23 are rejected under 35 U.S.C. 103(a) as being unpatentable over the Mukhopadyay (the M patent) in view of Jangbarwala et al patent 5,951,874, described hereafter as J or the J patent. These claims differ from the M patent in requiring the base dosing system to comprise tank having the solution and a dispensing

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conduit whereas M merely discloses source of base solution and conduit. The J patent teaches to store base in a tank prior to adding to water being treated (see tank 10, etc). It would have been obvious to have utilized a tank for storing the base being added as in J in the M system, in order to provide a larger, more reliable source of base as needed by flow volume demands.

Claim 25 is rejected under 35 U.S.C. 103(a) as being unpatentable over Mukhopadhyay (the M patent) in view of Walter patent 3,143,581, hereafter W or the W patent. Claim 25 differs from M in requiring inlet nozzles and outlet nozzles for distributing wastewater into and out of the ion exchange resin bed. W teaches such nozzles for an ion exchange unit at figure 1 as items 5 and 6 and at column 1, lines 20-23 and 31-39 with column 2, line 69-column 3, lines 15. It would have been further obvious to have utilized the distributing nozzles of J in the M system, in order to efficiently utilize the entire volume of the M resin bed for contacting the wastewater.

Applicant's arguments filed on 14 May 2007 have been fully considered but they are not persuasive. The arguments state that Mukhopadhyay lacks any base dosing system that raises the pH of water without lowering it. Each of numerous base dosing means and alkali adding means of the reference raise the pH of water rather than lowering it, such is the property of "base". If a negative limitation concerning absence of pH lowering means is implied; at least the embodiment of column 22, lines 8-31 indicates presence of acid adding means is optional "may be added".

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph Drodge at telephone number

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571-272-1140. The examiner can normally be reached on Monday-Friday from 8:30 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Steve Griffin, can be reached at 571-272-1189. The fax phone number for the examining group where this application is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either private PAIR or Public PAIR, and through Private PAIR only for unpublished applications. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have any questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

JWD

May 23, 2007

  
JOSEPH DRODGE  
PRIMARY EXAMINER